2.0 ARCHAEOLOGICAL INVESTIGATIONS

2.1 Methods

2.1.1 Background Research Methods

Prior to the initiation of the archaeological fieldwork, background research was conducted at the Delaware SHPO in Dover. This research consisted of the examination of the Delaware archaeological site files, the NRHP files, the historic resources inventory files, and reports documenting previously conducted cultural resource studies. In addition, cultural resource reports on file with DelDOT that are germane to the project goals were reviewed.

The background research revealed that no prehistoric archaeological resources that have been determined to be eligible for or listed in the NRHP are located within the project APE.

2.1.2 Field Methods

The Phase I archaeological survey of the project APE consisted of subsurface testing with 57.0 cm (22.4 in) diameter shovel test pits (STPs) and 1.0 x 1.0 m (3.3 x 3.3 ft) test units (1x1s). A metal detector survey preceded and augmented the subsurface testing at the Fields Test Area. Three STPs were excavated in the Ottey Test Area, while three STPs and eight 1x1s were excavated in the Fields Test Area (see Figure 2). No subsurface excavations were undertaken in the Culvert Test Area, due to its small areal size and its disturbed and inundated nature.

The STPs and test units were excavated in arbitrary 10.0 cm (3.9 in) levels within natural strata to a minimum depth of 10.0 cm (3.9 in) into the B horizon soil. All of the sediments recovered from each STP or test unit were screened through 0.64 cm (0.25 in) mesh hardware cloth. Information regarding soil texture and color, depth of any cultural material recovered, and any soil disturbances was recorded on Skelly and Loy's standard excavation forms. Daily notes were kept by the Principal Investigator, while STP and test unit notes were kept by the field crew members. Field data were recorded on standardized

field forms and were supplemented with notes made on the project maps, as warranted. The fieldwork was also documented with 35 mm black and white and color photographs.

Recovered cultural material was bagged by provenience, assigned a field specimen (FS) number, and returned to Skelly and Loy's Monroeville laboratory for processing and preliminary analysis. The Fields Test Area yielded historic period artifacts, while the Ottey and Culvert test areas did not yield any cultural materials (Appendix A).

2.1.3 Laboratory Methods

Once in the laboratory, all recovered artifacts were recorded, washed/dry brushed, sorted by class, labeled, and re-bagged. Each recovered artifact was individually examined and described. In-depth artifact analyses were not undertaken due to the ephemeral and non-diagnostic nature, as well as the small size, of the artifacts. Artifacts were first divided into major categories according to material type, and then further subdivided into more specific functional or typological categories within each type. Artifacts were prepared for curation at the Delaware State Museum according to their guidelines (Delaware State Historic Preservation Office 1993:47-54).

2.2 Archaeological Resources Predicted for the Project APE

2.2.1 Prehistoric

The following is a summary of previously identified prehistoric period sites in the general vicinity of the Red Mill Road Sidewalk Improvements project APE, and a discussion of the potential for the project APE to contain prehistoric period archaeological sites. Custer (1986:196) identifies 93 previously recorded archaeological sites within County Block D, where the project APE is located, and a total of 263 sites in New Castle County (Custer 1986:196).

Review of the Delaware archaeological site files did not yield any previously recorded prehistoric period archaeological sites within or adjacent to the project APE. Reviews of several previously completed cultural resource management project reports pertinent to the area indicate that prehistoric period archaeological sites are located within

8.1 km (5.0 mi) of the project APE. This information is summarized below in Table 1. Other prehistoric period sites are located further from the project area near Lums Pond, along S.R. 896 near Glasgow, and along U.S. 13 north of the Chesapeake and Delaware Canal.

Table 1.
Previously Identified Prehistoric Period Archaeological Sites
Within 8.1 Km (5.0 Mi) of the Project APE

Site Number, Site Name	Site Location	Temporal/Cultural Affiliation	Comments (References)
7NC-D-70	*Ca.* 2.9 km (1.8 m) east-southeast of project APE	10,000 B.C.-A.D. 1000	Not eligible for NRHP (Custer *et al.* 1982)
7NC-D-72	*Ca.* 3.2 km (2.0 mi) east-southeast of project APE	?	not eligible for NRHP (Custer *et al.* 1982)
7NC-D-108 Iron Hill East	*Ca.* 7.2 km (4.5 mi) southwest of project APE	Woodland I	Prehistoric jasper quarry; not eligible for NRHP (Petraglia and Knepper 1996)
7NC-D-125 Paradise Lane	*Ca.* 1.3 km (0.8 mi) south of project APE	Woodland I	Staging/processing station; full data recovery completed (Riley *et al.* 1994)
7NC-D-129 Dairy Queen	*Ca.* 1.9 km (1.2 mi) south of project APE	Woodland I (3,000 B.C.-A.D. 1000) and Woodland II (A.D. 1000-1650)	Small, short-term camp, used by a small party of hunters who were probably killing game at nearby swamps (Custer *et al.* 1988)
7NC-D-131 Gabor	*Ca.* 2.4 km (1.5 mi) south of project APE	Between 6,500-6,000 B.C.	Two occupations indicated by diagnostic projectile points recovered from the plow zone; postholes and a possible pithouse; temporary camp; Locus B is eligible for NRHP (Coleman *et al.* 1987; Hoseth and Seidel 1994)
7NC-D-190 Birchwood	*Ca.* 2.4 km (1.5 mi) south of project APE	Unknown prehistoric	(Hoseth and Seidel 1994)
7NC-E-1	*Ca.* 6.4 km (4.0 mi) southeast of project APE	Archaic (6,500-3,000 B.C.), Woodland I (3,000 B.C.-A.D. 1000), and Woodland II (A.D. 1000-1650)	Large site; series of separate occupations within a large area surrounded by swamps (Alterman *et al.* 1993)
7NC-E-9 Lewden Green	*Ca.* 5.6 km (3.5 mi) southeast of project APE	Woodland I and II (Minguannan Complex *ca.* A.D. 1350-1600)	Habitation and processing areas; plow zone contexts; not eligible for NRHP (Custer *et al.* 1990)

Table 1.
Previously Identified Prehistoric Period Archaeological Sites
Within 8.1 Km (5.0 Mi) of the Project APE
(Continued)

Site Number/ Site Name	Site Location	Temporal/Cultural Affiliation	Comments (Reference)
7NC-E-41 Delaware Park	*Ca.* 5.6 km (3.5 mi) northeast-east of project APE	Middle Archaic (6,000-3,000 B.C.) to the Late Woodland (A.D. 800-1600)	Prehistoric occupations (Thomas 1981)
7NC-E-43 7NC-E-45 7NC-E-75	Along S.R. 4, east of project APE	Woodland I and II (3,000 B.C.- A.D. 1000) (A.D. 1000-1650)	Resource recovery and processing stations; (Bachman and Custer 1983)
7NC-E-46 Hawthorn	*Ca.* 5.0 km (3.1 mi) southeast of project APE	1,000 B.C. and 750 B.C.	Resource procurement camp (O'Connor *et al.* 1983; Custer and Bachman 1984; Coleman *et al.* 1984)
7NC-E-58	*Ca.* 6.4 km (4.0 mi) southeast of project APE	N/A	Site where cobbles were worked to remove excess material in preparation for the manufacture of stone tools (Alterman *et al.* 1993)

Based on the presence of previously identified prehistoric period archaeological sites in the general vicinity of the project APE, the developed nature of the project APE, and the constricted areal size of the test areas, the Red Mill Road Sidewalk Improvements project APE is considered to have a low to moderate probability to contain prehistoric period archaeological sites. For a complete and detailed prehistoric period context of the project area, the reader is referred to *A Management Plan for Delaware's Prehistoric Cultural Resources* (Custer 1986), *Delaware Prehistoric Archaeology* (Custer 1984), and *Chesapeake Prehistory* (Dent 1995).

2.2.2 Historic

The following is a summary of previously identified historic period archaeological sites in the general vicinity of the Red Mill Road Sidewalk Improvements project APE, and a discussion of the potential for the project APE to contain historic period archaeological sites. For an extensive description of Delaware's Euro-American history, the reader is

referred to the *Management Plan for Delaware's Historical Archaeological Resources* (DeCunzo and Catts 1990). DeCunzo and Catts (1990:109-110, 112) list 107 previously identified historic period archaeological sites within New Castle County (including 37 in County Block D), the most of any of the three counties. Of these 107 sites, most (60%) are related to agricultural activities while 11 percent are residences, eight percent are industrial, seven percent are commercial, four percent are associated with public and/or religious functions, six percent are other types of sites, and two percent each are urban or unknown.

Review of the Delaware archaeological site files did not yield any previously recorded historic period archaeological sites within or adjacent to the project APE; however, one NRHP-listed property, the England House (Red Mill), is located adjacent to and within the project APE (see 3.0 HISTORIC RESOURCE SURVEY section of this report). Review of several previously completed cultural resource management project reports pertinent to the area indicate that historic period archaeological sites are located within 8.1 km (5.0 mi) of the project APE. This information is summarized below in Table 2.

Table 2.
Previously Identified Historic Period Archaeological Sites
Within 8.1 Km (5.0 Mi) of the Project APE

Site Number, Site Name	Site Location	Temporal/Cultural Affiliation	Comments (Reference)
7NC-D-68 A. Temple	*Ca.* 1.6 km (1.0 mi) south of project APE	Mid-nineteenth to mid-twentieth century	Tenant site; eligible for NRHP (Hoseth *et al.* 1990)
7NC-D-87 Taylor/Anderson	*Ca.* 5.6 km (3.5 mi) southeast of project APE	Late nineteenth century	Farmstead; not eligible for NRHP (Brown *et al.* 1990)
7NC-D-88 Bethel Church	*Ca.* 5.6 km (3.5 mi) southeast of project APE	Early nineteenth century	Baptist church; eligible for NRHP (Brown *et al.* 1990)
7NC-D-89 Clayton Farm	*Ca.* 5.6 km (3.5 mi) southeast of project APE	Early twentieth century	Farm complex; not eligible for NRHP (Brown *et al.* 1990)
7NC-D-126 John Ruth Inn	*Ca.* 1.9 km (1.2 mi) south of project APE	Eighteenth and nineteenth centuries	Inn; not eligible for NRHP (Coleman *et al.* 1990)
7NC-D-129 Dairy Queen	*Ca.* 1.9 km (1.2 mi) south of project APE	Late 1700s and the early 1800s	Farm (Custer *et al.* 1988)
7NC-E-46 William M. Hawthorn	*Ca.* 3.2 km (2.0 mi) east of project APE	1750-1961	Farm complex (O'Connor *et al.* 1983; Coleman *et al.* 1984)
Welsh Tract Schoolhouse No. 54	Newark	1851-1939	One-room schoolhouse (Catts *et al.* 1983)

Based on the absence of previously identified historic archaeological sites located within the project APE, the presence of one NRHP-listed property located adjacent to and within the project APE, the indications that this area has been inhabited by Euro-Americans since the sixteenth century (A.D. 1630+) (DeCunzo and Catts 1990:172), and the indication from historic maps and oral interviews that historic structures may have been present adjacent to the project APE, the Red Mill Road Sidewalk Improvements project APE has a high probability to contain historic period archaeological resources. Due to the long-term rural nature of the project APE, and based on the numbers of different types of previously identified historic archaeological sites located within New Castle County, if historic period archaeological sites are identified in the project APE they will likely be related to agricultural or milling activities.

2.3 Results

The Red Mill Road Sidewalk Improvements project Phase I archaeological survey and historic resource survey research tasks were initiated in November 2001 and completed in April 2002.

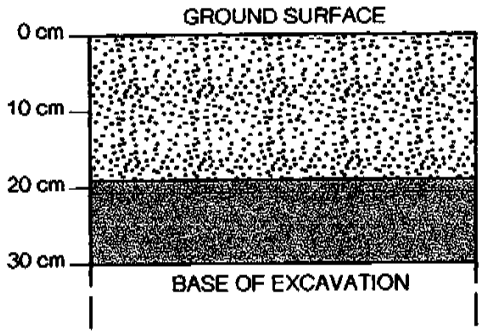
2.3.1 Ottey Test Area

Three STPs were excavated in the lawn area between bushes in this test area. The stratigraphic profiles of the three STPs confirmed that the area has been disturbed (Figure 4). All three excavated STPs were negative for prehistoric or historic artifacts, with only modern road gravel and glass identified.

2.3.2 Culvert Test Area

Due to the small areal size of the test area, its totally disturbed nature, and its inundation, no subsurface testing was accomplished and no cultural materials were identified.

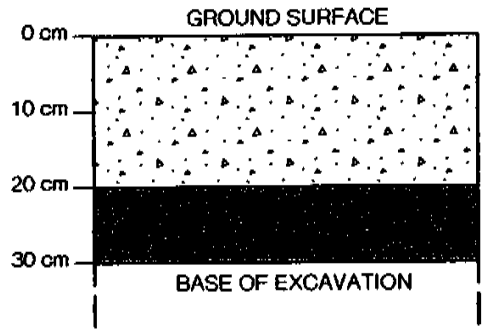
OTTEY TEST AREA
SOIL PROFILE
SHOVEL TEST PIT 1



Ap 10YR 5/3 Brown silt loam, with road gravel.

Bw 10YR 4/6 Dark yellowish brown silt loam.

OTTEY TEST AREA
SOIL PROFILE
SHOVEL TEST PIT 3



Ap 10YR 4/3 Brown silt loam, with road gravel.

Bw 10YR 6/6 Brownish yellow silt loam.

DELAWARE DEPARTMENT OF TRANSPORTATION

RED MILL ROAD SIDEWALK IMPROVEMENTS

MILL CREEK HUNDRED
NEW CASTLE COUNTY

SOIL PROFILES
SHOVEL TEST PITS

FIGURE - 4

SKELLY AND LOY, INC.
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ENVIRONMENT - ENERGY
ENGINEERING - PLANNING

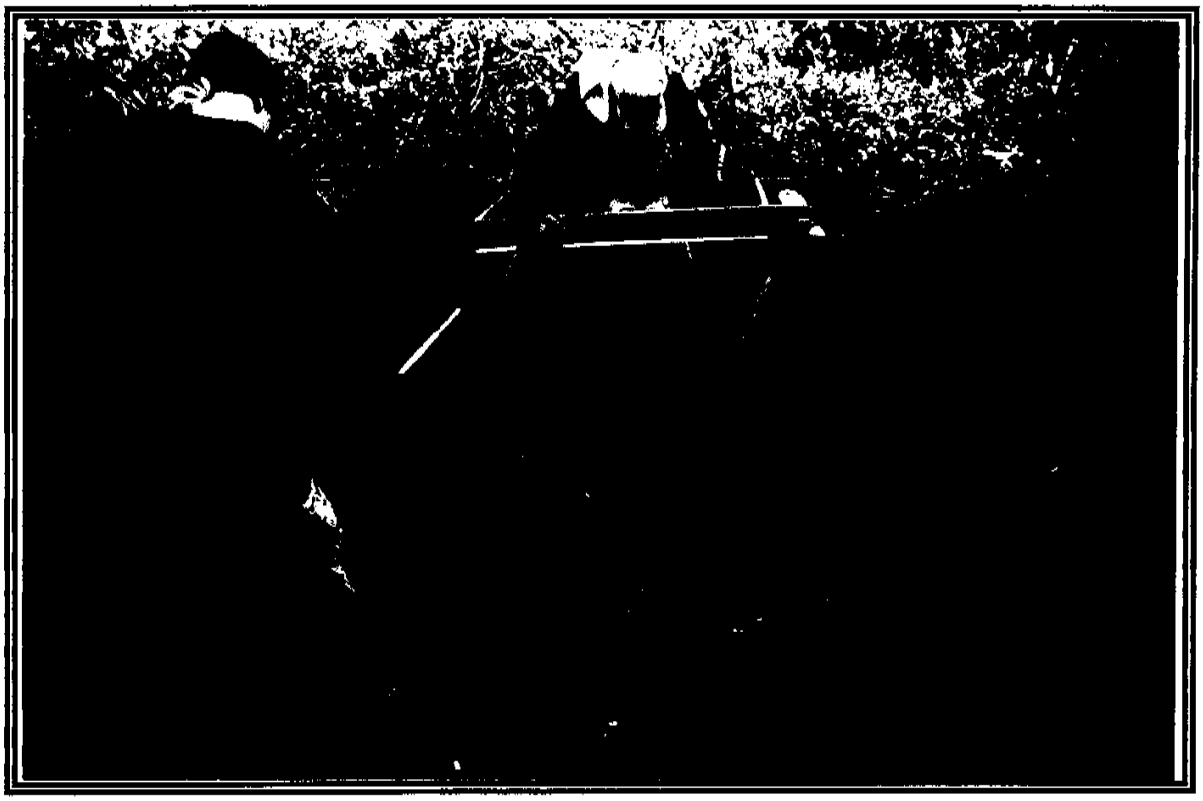
2.3.3 Fields Test Area

The Phase I survey of the Fields Test Area was accomplished in two steps, since there was the possibility of identifying remains of historic outbuildings and/or features associated with either the reported barn or the two-story stucco apartment building which were located nearby to the west. The first step included a metal detector survey of the entire test area, because historic structural remains are often readily identifiable by concentrations of nails and other architectural items. Several isolated metal artifacts and two concentrations of metal artifacts were identified. Isolated metal artifacts were detected in units N69 E34 (wire nail), N70 E33 (wire nail), N78 E34 (wire nail fragment), N79 E34 (wire nail), and N94 E33 (unidentified metal) (see Figure 2). The two concentrations of metal artifacts clustered just north of the existing driveway between the N53, N57, E24, and E27 grid lines and between the N60, N67, E23, and E28 grid lines (see Figure 2).

The northern cluster of metal artifacts is distributed over an area of approximately 29.0 m^2 (312.2 ft^2) in 10 different 1x1s and consists of one buckle, one U bolt, one piece of wire, four wire nail fragments, one large spike head fragment, one cut nail, and one piece of unidentifiable metal, all of which are ferrous. The southern cluster is distributed over an area of approximately 10.0 m^2 (107.6 ft^2) within six different 1x1s, and consists of one handle, three wire nails, one wire nail fragment, and four pieces of unidentifiable metal, including one piece of machinery. The metal artifacts recovered from the southern cluster are also ferrous.

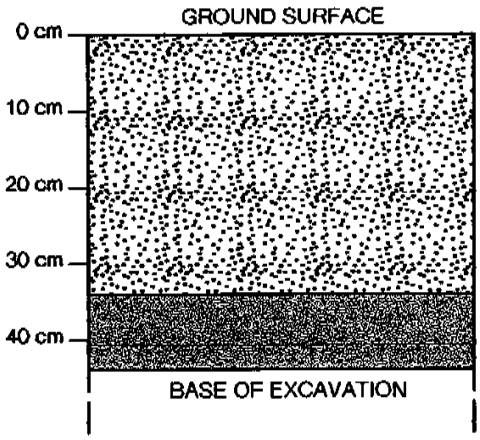
The second step included the excavation of three STPs and eight 1x1s within the test area (Photograph 1). The excavated STPs and 1x1s were purposefully located in order to assure that excavations covered the entire test area and to specifically examine areas where the metal detecting survey indicated that concentrations of metal objects were present. Despite the identification of two clusters of metal artifacts during the metal detecting, no subsurface indications of historic outbuildings or associated features were present in any of the excavated units emplaced over these artifact clusters.

The stratigraphic record, revealed by these excavations, is consistent over the entire Fields Test Area. Two natural strata were identified during the subsurface excavations (Figures 5 and 6; Photographs 2, 3, and 4). Stratum I, the uppermost stratum (Ap horizon) is continuous across the excavated portion of the test area. Vertically, it originates at the



Photograph 1. Excavation in progress in the Fields Test Area, facing east.

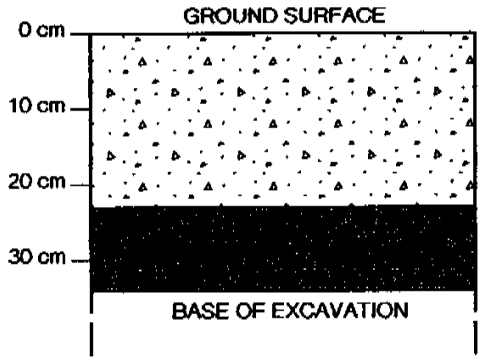
FIELDS TEST AREA
SOIL PROFILE
1X1 METER UNIT N30 E21



Ap 10YR 5/3 Brown silt loam.

Bw 10YR 5/6 Yellowish brown silt loam.

FIELDS TEST AREA
SOIL PROFILE
1X1 METER UNIT N54 E25



Ap 10YR 4/3 Brown silt loam, with road gravel, slag, and coal.

Bw 10YR 6/6 Brownish yellow silty clay loam.

DELAWARE DEPARTMENT OF TRANSPORTATION

RED MILL ROAD SIDEWALK IMPROVEMENTS

MILL CREEK HUNDRED
NEW CASTLE COUNTY

SOIL PROFILES
1X1 METER UNITS

FIGURE - 5

SKELLY AND LOY, INC.
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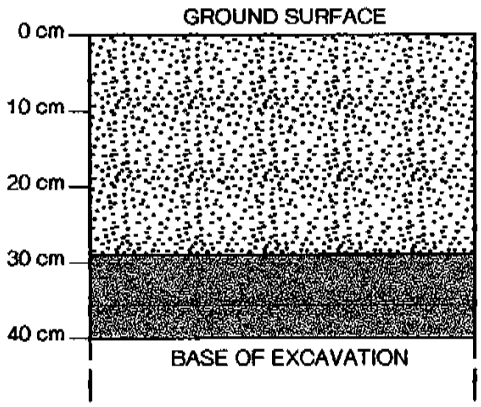
ENVIRONMENT - ENERGY
ENGINEERING - PLANNING

FIELDS TEST AREA
SOIL PROFILE
1X1 METER UNIT N82 E35



Ap 10YR 5/6 Yellowish brown silt loam, with coal and asphalt fragments.

Bw 10YR 6/8 Brownish yellow silt loam.

DELAWARE DEPARTMENT OF TRANSPORTATION
RED MILL ROAD SIDEWALK IMPROVEMENTS MILL CREEK HUNDRED NEW CASTLE COUNTY
SOIL PROFILE 1X1 METER UNIT
FIGURE - 6 — SKELLY AND LOY, INC. CONSULTANTS IN ENVIRONMENT - ENERGY ENGINEERING - PLANNING

Photograph 2. West wall profile of excavation unit N82 E35, facing west.

Photograph 3. West wall profile of excavation unit N54 E25, facing west.

Photograph 4. South wall profile of excavation unit N30 E21, facing south.

modern ground surface and continues to a maximum depth of 43.0 cm (16.9 in) below the modern ground surface. Stratum I is a silt loam, averages 21.4 cm (8.4 in) in thickness, and is 10YR 5/3 or 10YR 4/3 brown or 10YR 5/4 or 10YR 5/6 yellowish brown in color. Historic period ceramic, glass, and metal artifacts, as well as roadway gravel, slag, coal, and brick fragments, are associated with Stratum I.

Stratum II, the subsoil (Bw or Bw1 horizon), underlies Stratum I by a clear smooth interface. Horizontally, Stratum II is continuous across the excavated portion of the test area. Stratum II is characterized as a 10YR 6/6 and 10YR 6/8 brownish yellow or 10YR 5/4 and 10YR 5/6 yellowish brown compact silt loam or silty clay loam. Stratum II is culturally sterile; however, evidence of plow scars is present at the Stratum I/II interface in two of the excavated units. The plow scars indicate a consistent north-south direction of plowing.

One lens of redeposited material/fill was identified in the Fields Test Area. This fill was not found to be continuous over the excavated portion of the site, as it was only present in excavation unit N66 E27 and STP 3. Based on the presence of the fill in the two excavated units and numerous expedient hand auger borings taken around these units, the fill lens is roughly ovoid in shape. Vertically, this fill, when present, underlies Stratum I. The fill is a 10YR 5/3 brown silt loam which contains brick, metal, and coal fragments. Based on the size, shape, and contents of the fill lens, it is most probably the remains of a backdirt pile associated with a late historic episode of road or driveway construction and/or maintenance.

One of the three STPs and seven of the eight 1x1s excavated in the Fields Test Area proved positive for historic period artifacts. Glass, ceramic, metal, shell, and brick items were recovered from the Fields Test Area excavations. All of the artifacts were recovered from Stratum I, with the exception of a small fragment of clear container glass, which was recovered from Stratum II in excavation unit N30 E21. Very few of the recovered artifacts are diagnostic with regard to specific function or chronological ascription.

Non-diagnostic clear container and flat glass fragments, as well as one piece of amber colored container glass, one piece of light olive colored container glass, and a complete Piels beer bottle comprise the glass portion of the Fields Test Area artifact assemblage. Two small pieces of solarized container glass can be tentatively assigned a production date range of 1880 to 1915 (Jones and Sullivan 1985; Munsey 1970), while the

Piels beer bottle is modern. With the exception of the beer bottle, none of the recovered glass fragments exhibit maker's marks or trademarks.

Redware, yellowware, and whiteware fragments are included in the Fields Test Area artifact assemblage. All of the ceramic sherds are small and are not diagnostic with regard to specific vessel form or function. No maker's marks or trademarks appear on the sherds. Only general date ranges can be assigned to most of the ceramic sherds. Redwares are the earliest type of American ceramics and were made in all sections of the country using local clays (Ramsay 1947). Redwares, especially utilitarian non-glazed forms (e.g., flowerpots, drainage pipes, and roof tiles), continue to be manufactured today. Yellowwares or buff-colored bodied ceramics were first manufactured in the United States in the 1820s but were not manufactured in quantity until the 1900s (Gallo 1985; Gates and Ormerod 1982). Whitewares, which were first produced in the United States in the 1830s, are still presently manufactured (Ramsay 1947; Spargo 1926). One piece of shell-edge pearlware can be generally dated to between 1780 and the 1820s, while one piece of flow blue decorated whiteware can be dated to between 1835 and 1900 (Mason 1982).

In addition to the metal artifacts identified during metal detecting activities, cut nails and fragments of unidentified ferrous metal were also recovered during the Fields Test Area excavations. Nails are associated with long production and use date ranges. Cut nails were first produced in 1790 and are still manufactured today. Wire nails first appeared in the 1850s, were not widely used until the 1890s, and continue to be manufactured and used (Nelson 1968).

Three mollusk shell fragments, most likely representative of agricultural fertilizing activities, were recovered from excavations in the Fields Test Area. This agricultural explanation for the shell is corroborated by the presence of plow scars at the Stratum I/II interface in two of the excavated units.

Although 103 historic period artifacts were recovered during the Phase I survey of the Fields Test Area, most are not functionally diagnostic due to their small size and incomplete form, and are not chronologically diagnostic to a specific temporal period because they have lengthy manufacturing and use periods or were recovered from sediments demonstrating mixed historic and modern temporal contexts. None of these artifacts are associated with any historic structures or features. These artifacts are indicative of general residential/domestic and agricultural/rural land use and do not

contribute significant information about the specific land-use history within the project APE. Generally, the historic artifacts recovered from the Fields Test Area confirm the known historic land use of the project APE from the late eighteenth century to today.